DRISI

Caltrans Division of Research, Innovation and System Information

Research Notes

Pavement

FEBRUARY 2022

Project Title:
RAP/RAS in RHMA for use in Interlayers, Rich Bottom Layers, and Base for PCC

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RAP/RAS in RHMA for use in Interlayers, Rich Bottom Layers, and Base for PCC

Development of Testing Procedures and Criteria for Performance Based Specifications (PRS) for High Reclaimed Asphalt Pavement (RAP)/ Reclaimed Asphalt Shingle (RAS) in Rubberized Hot Mix Asphalt (RHMA) for use in Interlayers, Rich Bottom Layers, and Base for Portland Cement Concrete (PCC) and Asphalt Concrete (AC)

WHAT IS THE NEED?

This is a continuation of current research to investigate the use of RAP in RHMA without reducing the amount of recycled tire rubber used by Caltrans. There is growing interest in adding some RAP to RHMA-G mixes. Given that binder replacement is typically achieved by using finer fractions of the RAP, using coarser RAP left over from removing the finer fractions will allow some RAP addition to RHMA-G mixes, thereby using all processed RAP without reducing the amount of recycled tires that are used.

WHAT ARE WE DOING?

This task will continue laboratory testing to establish properties of RHMA mixes containing RAP/RAS. CalME simulations will be run to quantify performance of these mixes in interlayers, rich bottom layers, and base for new PCC pavements, where both stiffness and crack resistance are required.

WHAT IS OUR GOAL?

The goal of this task is to develop guidelines for use of RAP in RHMA mixes where both stiffness and crack resistance is required, and to prepare performance related specifications for RHMA used in Interlayers, Rich Bottom Layers, and Base for new PCC pavements.

WHAT IS THE BENEFIT?

This research will continue the decrease environmental impacts by allowing RAP into RHMA without reducing the amount of recycled tire rubber used by Caltrans. It will also reduce maintenance costs by developing simplified performance related specifications to maintain the necessary stiffness and crack resistance for the pavement.

WHAT IS THE PROGRESS TO DATE?

As of February 2022, the research team has made the following progress:

- Continuing to work on literature review
- Work on draft specification and other Caltrans document changes for updating thickness limits and other changes in CalME. Continuing analysis of mix fatigue testing results for HMA mixes with small amounts of Crumb Rubber Modifier (CRM) and RAP from previous 4.62 project for use in CalME
- Continuing analysis of test data for RHMA mixes with coarse RAP. Develop initial list of mix types to test once laboratory capacity becomes available